



Scandinavian data center

DPA 500 UPS modular design fulfills
customer needs.



This project is a key reference for ABB's modular UPS. It shows that very critical applications are best served by using modular UPS technology with an N+1 configuration.

One industry segment is growing almost as fast as the Internet can expand: the data center business. The huge collections of servers and storage devices housed in data centers contain an immense amount of information that is used by governments, banks, commerce, medicine and a whole host of industries, including search engines, like Google, and social networking sites. The effect of a power failure in such an installation can be catastrophic. It will impact company revenue and image, so great care is taken to make sure that the very best backup power scheme is in place. A reliable and efficient uninterruptible power supply (UPS) is a mainstay of such a scheme.

Once the UPS is installed, however, it becomes a focus of reliability – for what use is it if it fails just when it is needed? In many cases, the result of a UPS failure can be disastrous. For this reason, the most critical loads are protected by the very best UPS design - decentralized parallel architecture (DPA). DPA not only provides the best availability, but also the best efficiency, serviceability, scalability and flexibility. Taken together, these features all deliver a low total cost of ownership (TCO).

Many data centers are being located in higher latitudes to exploit natural cooling and it is in such a northern location that

ABB recently received a significant order for a four-frame DPA 500 UPS system. The DPA 500 has been well received by markets around the world as it matches exactly the needs of many customers – especially those responsible for large data centers. The DPA 500 has critical advantages that made it a natural choice for this major customer in Scandinavia.

Modular

The key to the DPA 500s success is that the UPS is modularized and each module has all the hardware and software needed for autonomous operation - rectifier, inverter, battery converter, static bypass switch, back-feed protection, control logic, display, and mimic diagram for monitoring and control. A module's output is not affected by failures elsewhere in the UPS. If redundancy is provided for - ie, there are more modules than needed to supply the critical load - then one or more modules can be lost without jeopardizing the load. Availability is maximized which is a key requirement in a data center.

Further, as UPS power requirements change it is simple to add modules and increase the power capabilities; the initial configuration does not have to be over specified to cater for possible future expansion. This means the user only cables, powers and cools what is needed. Besides availability, power consumption is the topic of greatest concern for most

data center operators and the energy savings made over the service life of the UPS by this modular approach are substantial.

Online-swapping and serviceability

DPA 500 modules can be online-swapped, ie, removed or inserted, without risk to the critical load and without the need to power down or transfer to raw mains supply. This unique aspect of modularity directly addresses continuous uptime requirements, significantly reduces repair times, reduces inventory levels of specialist spare parts and simplifies system upgrades. Service personnel do not need special skills. Spares can be held on-site or at a nearby service center.

This online-swap technology, as well as having a significant impact on cost, can also help achieve so-called six nines (99.9999 percent) availability - highly desirable for data centers in pursuit of zero downtime.

Energy and space costs

The DPA 500's modularity and scalability ensure a low cost of ownership, but costs are held down too by the DPA 500's best-in-class energy efficiency - up to 96 percent. The DPA 500 efficiency curve is very flat so there are significant savings in every working regime. Further, better efficiency results in less cooling, creating further savings. Modularity lends itself well to keeping UPS footprint small, too which is ideal where real estate is limited and expensive.

Standardized modules

DPA 500 modules are standardized. This keeps costs low. A straightforward, standardized modular concept simplifies and speeds every step of the deployment process - from planning, through installation and commissioning to final use. High-quality standardized products significantly reduce intervention time during maintenance or in the event of failure, components can be changed quickly and easily and service is simplified. Modular systems with standardized connections can be pre-wired and field-configured at the factory allowing for more thorough testing and better reliability.

ABB representative Conny Hurtig said, "our client in Scandinavia recognized all the advantages the truly modular architecture of the DPA 500 brings and decided to go with ABB. They needed extensions and changes to the current 12 kV and 0.4 kV systems, backup power and UPS system and the two DPA 500s fitted the UPS bill perfectly. ABB's modular UPSs were chosen mainly because of their reliability, advanced technology, and the prestige and high quality associated with the ABB brand."

The four-frame, DPA 500 N+1 configurations will be installed in two new IT room segments and have startup power capacities of 500 kW and 900 kW respectively, with 10 minute battery backup. They can be upgraded to 900 kW and 1,500 kW. For further flexibility, UPS capacity can be quickly switched from one system to the other, in minutes. The battery bank comprises 690 Powersafe 12V92F from energy storage solution provider Enersys on open racks and 15 ABB battery breakers. An ABB AKKA battery monitoring system for 690 blocks was also supplied, with measurement resolution in the mV range. AKKA periodically transmits battery performance



data at block level and ensures that the critical backup power systems are ready when needed. The monitoring solution is fully in compliance with DPA battery tests. Communication is by Modbus over SNMP (USHA).

Heikki Rantama, ABB representative comments, "apart from the technical specification, the customer was well aware of the advantages of ABB's local support and the quality of this Swiss product. But ABB's novel concept, even though we didn't follow the customer's specs, swung things for us too."

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For more information visit: www.abb.com/ups.

